Design and Preliminary Evaluation of a Psychological Counseling Training Game Using Generative AI Virtual Characters Based on Situational Learning as a Case Study

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The Southeast Asian Conference on Education 2026
Official Conference Proceedings

Abstract

Recommendations for teaching strategies in psychological counseling training suggest conducting repetitive and realistic training, which is relatively costly. Digital simulation and game-based learning are expected to provide highly motivating, iterative practice opportunities that are low-cost and unrestricted by time or location. This study employed our team's scenario-based Generative AI (GenAI) character technology module to design an educational game for training psychological counseling in bullying cases. Players assume the role of teachers who must interact with AI-generated bullied students within a time limit. The game objectives involve understanding the facts surrounding the bullying incident and implementing appropriate interventions. All 20 participants were active teachers in Taiwan. Findings indicate high levels of flow engagement and significant improvements in counseling self-efficacy. Participants reported high perceived usefulness and ease of use, expressing willingness to replay the game. Qualitative feedback revealed over half felt it enhanced counseling skills (50%) and provided realistic scenarios (50%). Preliminary findings indicate that this educational game enables low-cost, repeated practice of counseling essentials, making it suitable as a preparatory exercise before real-person case simulations. Future enhancements could include increased interactive sophistication and more learning feedback to improve training utility and realism.

Keywords: generative AI, game-based learning, psychological counseling training, school bullying, situated learning, self-efficacy

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Introduction

Bullying is a widespread problem in schools around the world (Burger et al., 2015). From a social ecological perspective, the social context in which bullying occurs is not solely defined by individual perpetrators or victims (Yoon, 2004), but also involves peers (such as bystanders, reinforcers, and defenders) and educators (Salmivalli, 2010). When bullying occurs in schools, immediate intervention by peers or educators can successfully halt the behavior (Veenstra et al., 2014). Victims often remain passive, leading to a sense of helplessness over time (Craig et al., 2007). Teachers can collaborate with victims to enhance and support their well-being by boosting their self-confidence (Field, 1999). Burger et al. (2022) research indicates that teacher interventions significantly influence students' adoption behaviors and bullying-related roles, aiding in the development of more precise subsequent intervention strategies. These findings hold important practical implications for future teacher training and the professional development of practicing educators.

Simulation-based instruction has become an indispensable component of modern teaching, providing a safe learning environment. While simulations cannot replace real-world experiences, they serve as a valuable supplement to traditional teaching methods. They enable students to make mistakes and learn from them within a controlled setting, thereby enhancing learners' skills and behaviors (Münch et al., 2025). Lim et al. (2025) research indicates that many teacher training programs still struggle to effectively bridge theoretical knowledge with practical application in real-world scenarios. Gen AI-enhanced character simulations offer heightened realism and immersion, with AI agents capable of more dynamic interactions. This facilitates learners' contextual understanding of problem-solving and boosts motivation for learning. Chien et al. (2024) noted that integrating generative AI as non-player characters (NPCs) into role-playing activities serves a scaffolding function, guiding learners toward reflection (Chien et al., 2024).

Carneiro & Backes (2023) demonstrated that gamified learning promotes interaction, immersion, and expression, thereby enhancing learning outcomes and skill development. Game elements evoke learners' engagement, motivation, and sense of accomplishment (Kapp, 2012). Furthermore, integrating narrative scenarios grounded in situated learning theory (Brown et al., 1989) with simulation games can boost learner motivation and intensify flow experiences (Chien et al., 2022).

Our research team has developed a ChatGPT-NPC scaffolding system for educational games (Chen & Hou, 2024). These scaffolding leverages RAG technology to integrate plugin modules such as character profiles, knowledge content text settings, similarity analysis, and off-topic diagnostic questioning. These enhance conversational authenticity while providing multiple real-time scaffolding instructional frameworks. This novel learning mechanism features GenAI portraying a bullying victim, with players assuming the role of teachers. Interactions occur via handwriting or voice input on mobile devices or computers, with the AI responding via text-based feedback. This mechanism fully records interactions for learners to review and reflect repeatedly. By engaging in scenario-based interactions with the "bullied student" constructed by generative AI, learners gain deeper insight into the context surrounding bullying incidents. They practice appropriate intervention and management strategies within simulated scenarios, thereby strengthening their professional judgment and response capabilities.

Methods

The objective of this game is to assist the story's protagonist, Kai (a 13-year-old GenAI character), in articulating the narrative context of his bullying experiences. Based on this understanding, players must identify appropriate counseling interventions and response strategies. Figure 1 displays the interface presented to learners on mobile and computer screens. Additionally, Figure 2 illustrates the interface shown during learners' dialogues with the GenAI character.

This study is a pilot investigation involving 20 practicing teachers in Taiwan. Participants ranged in age from 22 to 60 years old. Each individual used a mobile phone or computer, with the total experimental duration being 40 minutes: 10 minutes for story introduction, game rules, and digital platform orientation; 20 minutes for questionnaire completion; and 20 minutes for learner interaction with the GenAI character. The study examined self-efficacy, flow, perceived usefulness, usability, and game elements. The self-efficacy scale was adapted from the self-efficacy section of Pintrich (1991) “A manual for the use of the motivated strategies for learning questionnaire (MSLQ)” and modified to align with this study's context, yielding internal consistency (Cronbach's $\alpha = 0.952$). Flow experience was measured using Kill's (2006) Flow Scale, administered via the Chinese version translated by Hou and Li (2016) and modified to align with this study's terminology, with internal consistency (Cronbach's $\alpha = 0.941$). Game usefulness and usability were measured using a modified version of Davis' (1989) Technology Acceptance Model, with internal consistency (Cronbach's $\alpha = 0.923$). Game elements were assessed using Hou's (2016) scale, modified to align with this study's context, with high internal consistency (Cronbach's $\alpha = 0.843$). This study investigated the effects of flow, self-efficacy, game elements, and game usage feedback during learner interactions with the GenAI character. Additionally, an open-ended question was explored to gain deeper insights into identifying clues and developmental contexts related to the character (Kai) experiencing bullying within the scenario.

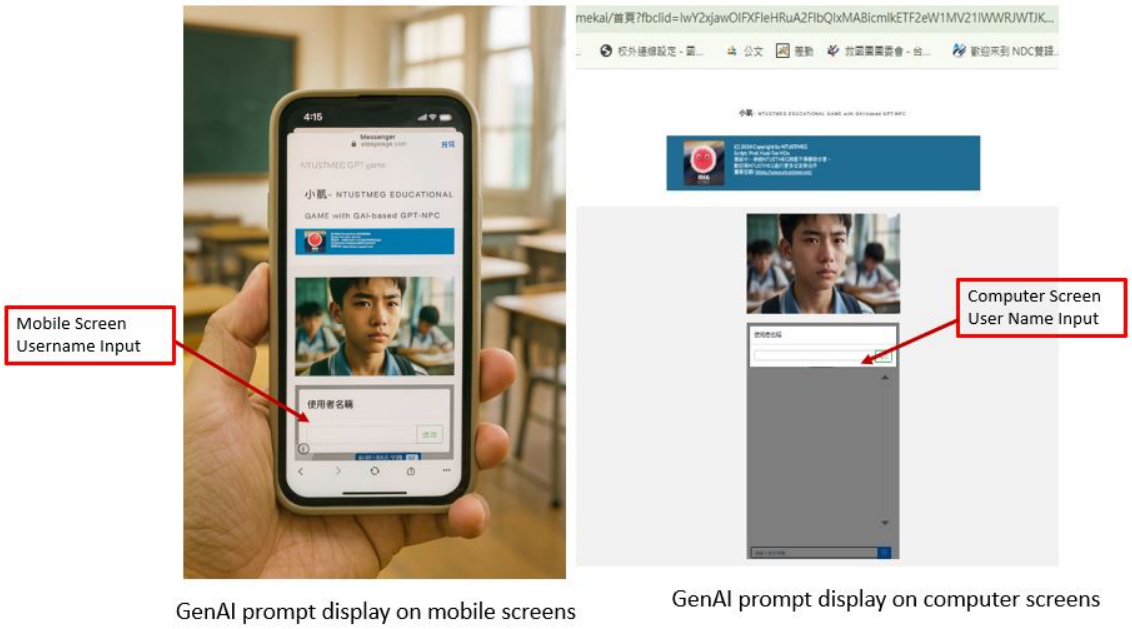
Figure 1

Screenshots of This Game on PC and Mobile Devices

Interaction screen between the learner and the GenAI character displayed on the mobile device

Interaction between the learner and the GenAI character on the computer screen

Figure 2
Dialogue Between the Learner and the GenAI Character During Interaction in the Game



Results and Discussions

According to the single-sample Wilcoxon Singed-Rank analyses (e.g., Table 1 and Table 2), investigating participants' flow (M = 4.04, SD = 0.58), game acceptance (M = 4.22, SD = 0.49), game Usefulness (M = 4.37, SD = 0.43), game ease of use (M = 4.22, SD = 0.74), and game elements (M = 3.95, SD = 0.65), the means were significantly higher than the median of the scales (i.e., 3). It means that the game mechanism is easy to operate and readily accepted and enhances the learners' flow.

Additionally, learners mentioned postive feedbacks, such as: “It was quite a novel experience today,” “The game provided a very authentic situational feel during participation,” and “AI interactions, akin to operating a simulator, effectively enhance coaching skills and identify areas for improvement—a brilliant design.” Qualitative feedback indicates learners experienced novelty, authentic situational immersion, and enhanced learning outcomes through the game. Based on the above analysis, preliminary findings indicate that this generative AI mechanism effectively aids participants in developing counseling knowledge and skills while providing a realistic scenario experience throughout the engagement process.

Table 1
The Mean and Standard Deviation of Learners' Flow

(N = 20)				
	M	*SD*	*Z*	*Sig.*
Overall Flow	4.04	0.58	3.92***	< .000
Flow antecedents	4.08	0.60	3.81***	<. 000
Challenge-skill balance	4.10	0.66	3.66***	< .000
Goals of an activity	4.12	0.81	3.60***	< .000
Unambiguous Feedback	3.97	0.57	3.71***	< .000
Control	4.25	0.66	3.80***	< .000
Playability	3.95	1.01	3.03**	0.002
Flow experience	4.04	0.58	3.92***	< .000
Concentration	4.30	0.58	3.95***	< .000
Time distortion	3.88	0.94	2.97**	0.003
Autotelic experience	4.01	0.66	3.74***	< .000
Loss of self-consciousness	3.72	0.94	2.77**	0.006

**p < 0.01, ***p < 0.001

Table 2
The Mean and Standard Deviation of Learners' Game Feedback, and Game Elements

(N = 20)				
	M	*SD*	*Z*	*Sig.*
Game Feedback	4.22	0.49	3.92***	< .000
Game Usefulness	4.37	0.43	3.93***	< .000
Game Ease of Use	4.22	0.74	3.79***	< .000
Game elements	3.95	0.65	3.83***	< .000

***p < 0.001

Conclusions and Limitations

This study designed a scenario-based GenAI generative AI character technology module, creating an educational game for training psychological counseling in bullying cases. The goal is for participants to interact with an AI-generated bullied student character, aiming to understand the facts surrounding the bullying incident and implement appropriate interventions. Learners can understand the context of bullying incidents and implement appropriate interventions by interacting with the AI-generated bullied student character. Participants demonstrated high levels of flow engagement and high self-efficacy during gameplay. They reported high perceived usefulness and ease of use, expressing willingness to replay the game.

In summary, this game mechanism holds potential for training teachers to counsel bullied students. It enables low-cost, repeated pre-training sessions for teachers counseling bullied students. Future iterations could enhance interaction refinement and provide more learning feedback to improve training effectiveness and realism. Future research should test counseling approaches with diverse student populations to validate this hypothesis. Designing experimental and control groups is also recommended to enhance the study's validity. Furthermore, when applying GenAI to psychological counseling contexts, careful consideration of relevant ethical issues is essential to ensure the technology's use aligns with professional standards and educational objectives.

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